



The Semantic Sea Ice Interoperability Initiative

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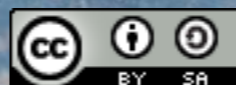


Image courtesy Andy Mahoney, NSIDC

SSII works to make Arctic data more useful to more people.

Extend a network of Arctic data and systems and harmonize metadata.
Create integrative sea ice ontologies and encourage their use.
Improve the discovery, understanding, and use of sea ice data.





Sea Ice Index

Sea Ice Extents, 1979-2006

monthly median sea ice extent 1979-2006

1979 Sept



Image © 2007 NASA



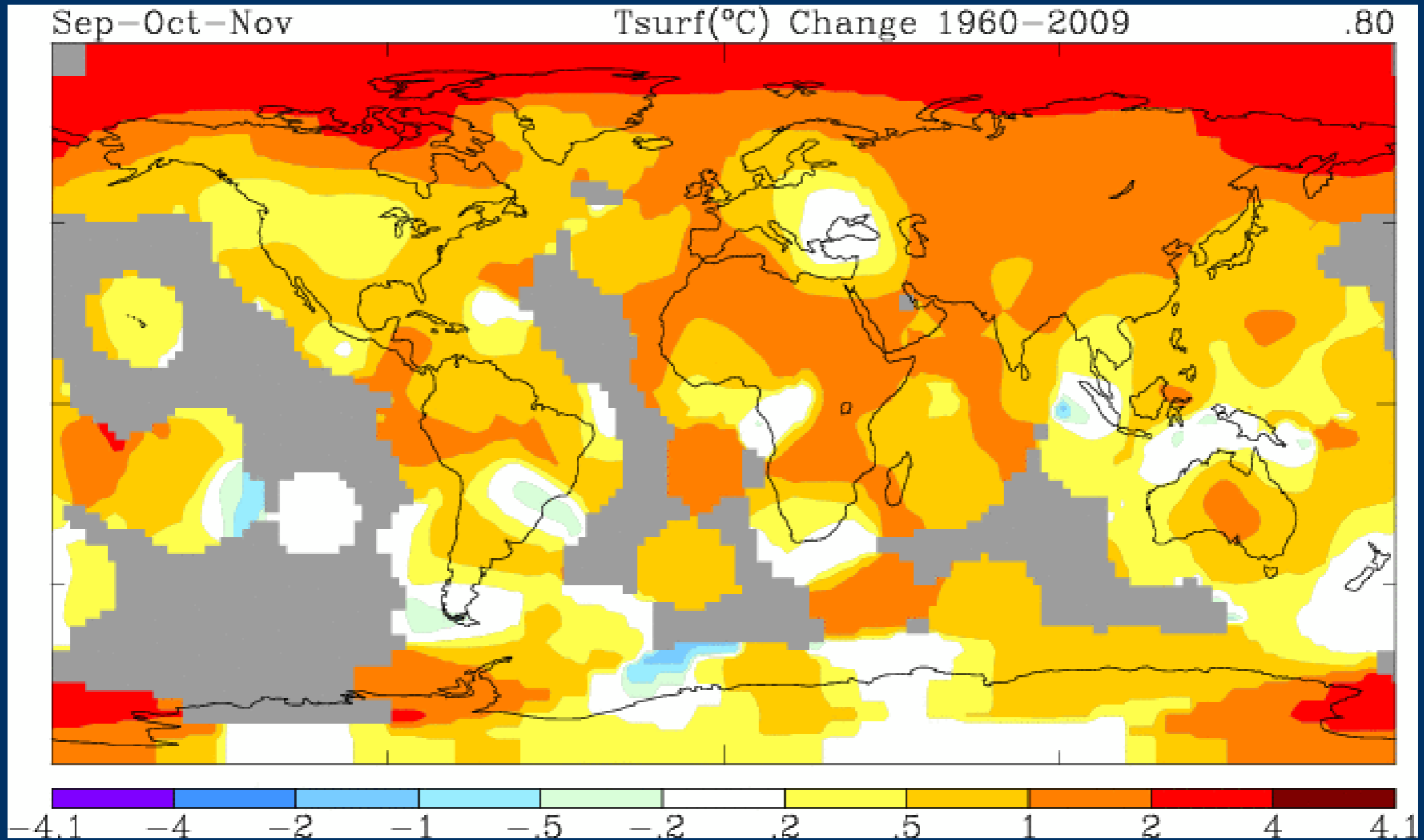
Google

September 2007



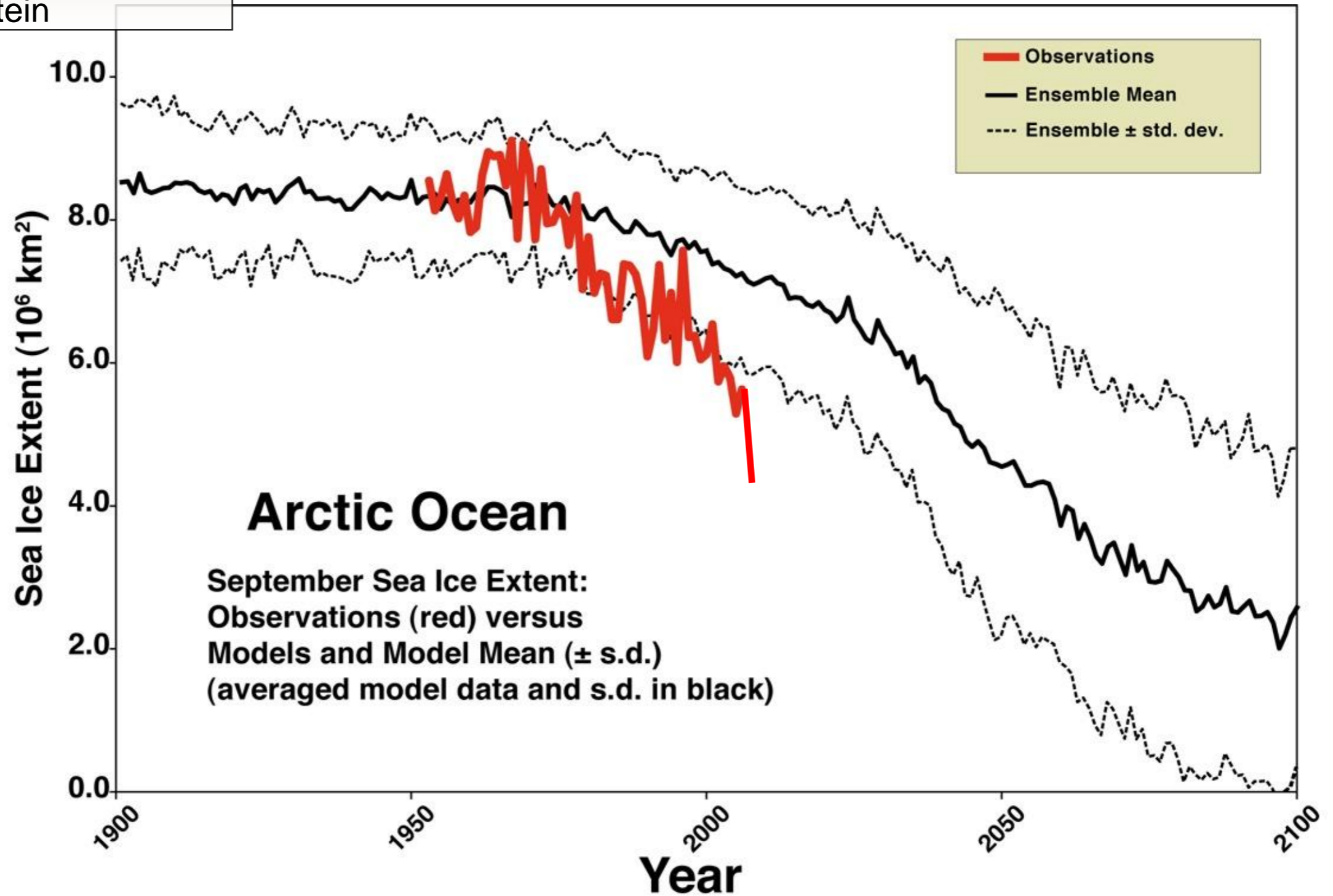
Google

Observed autumn temperature trends, 1960-2009



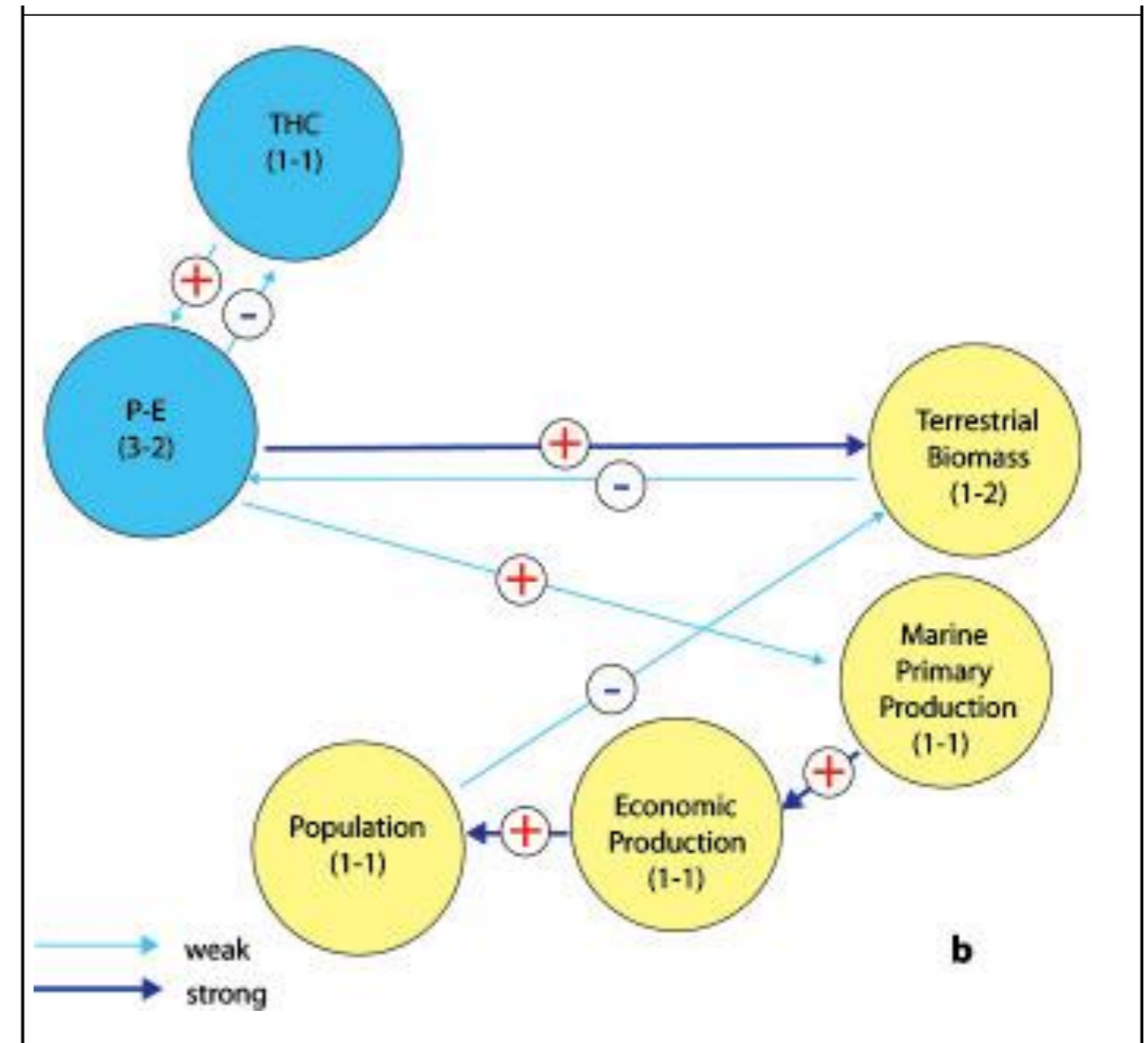
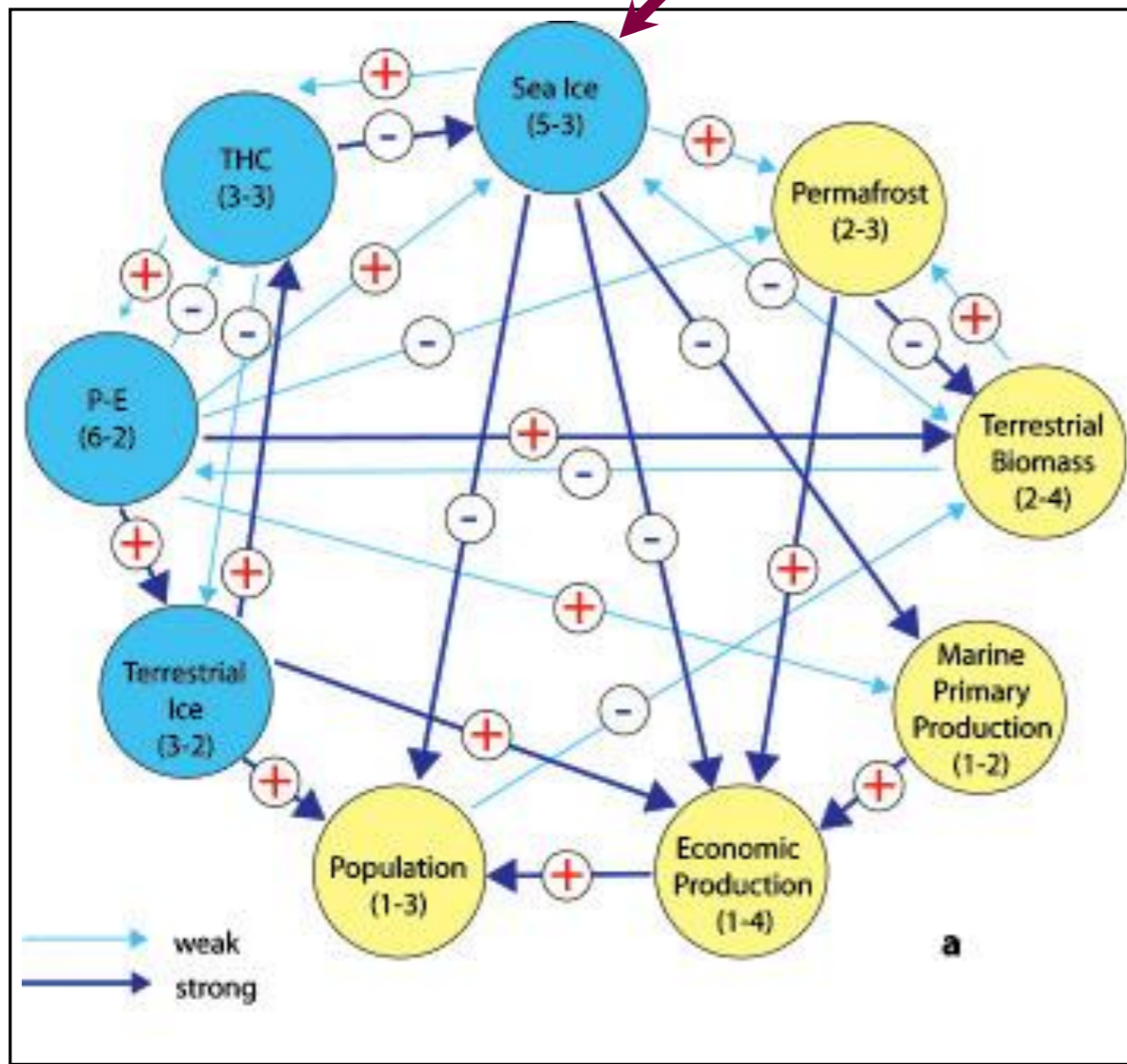
GISS Analysis and NCEP/NCAR Reanalysis (Courtesy M. Serreze)

If we knew what it was we
were doing, it would not be
called research, would it?
- Albert Einstein



Stroeve, J., M.M. Holland, W. Meier, T. Scambos, M. Serreze, 2007.

sea ice



The Arctic system with and with out sea ice from Overpeck et al. 2005.



photo courtesy *The Inquisitr*

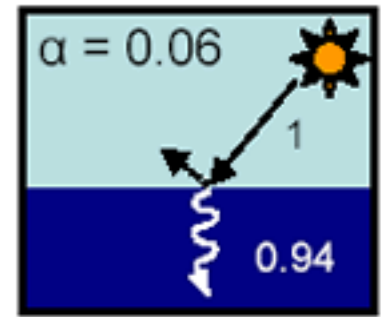
Operational Perspective

A Coast Guard Icebreaker cutting a path for a tanker to get fuel to the iced in city of Nome, Alaska.

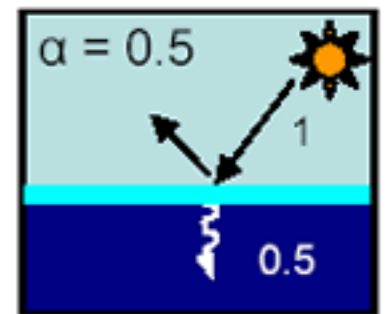


© Karen Frey, The Polaris Project

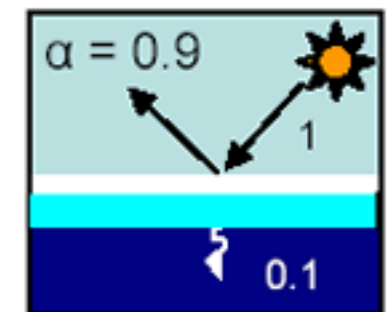
I. Open ocean



II. Bare ice



III. Ice with snow



Research Perspective

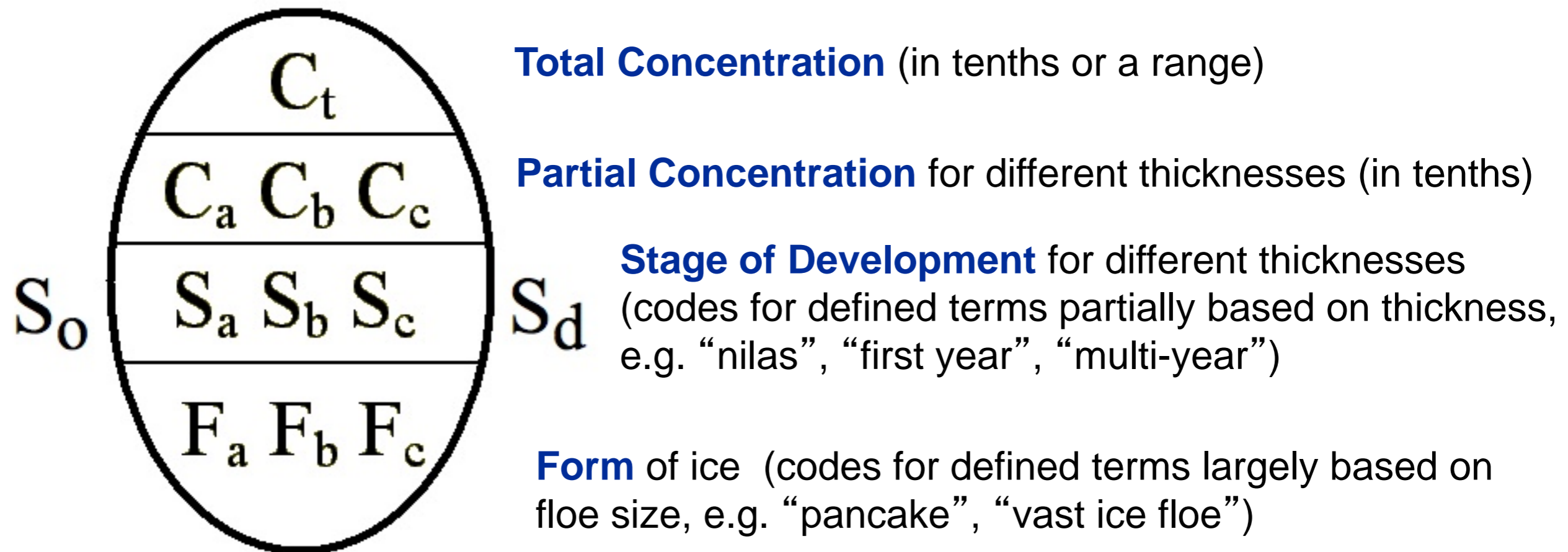
How is the changing sea ice affecting the ice-albedo feedback?



The Local Indigenous Perspective

- earlier break up / later freeze up (2-3 weeks each)
- increased weather variability / traditional forecasts no longer work
- sea ice thinner; poorly formed (poor strength/integrity)
- seasonal calendar off; some names no longer apply
- etc. etc.

The WMO “Egg Code”



Relates to the “WMO Sea Ice Nomenclature”

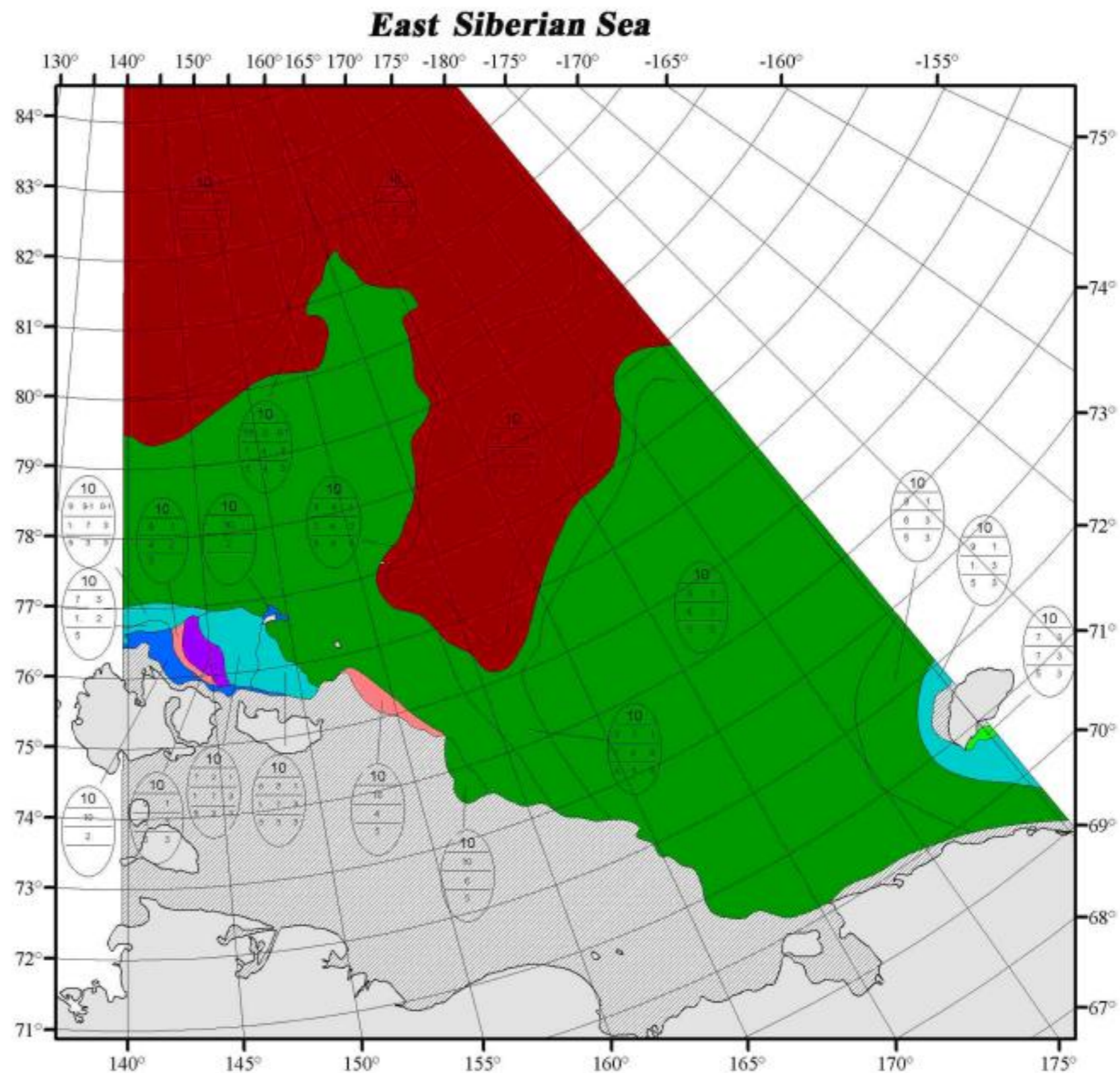
Арктический и Антарктический
научно-исследовательский
институт Росгидромета

Arctic and Antarctic Research
Institute of Roshydromet

Feb. 28 - March. 02 2005

- free
- New ice
- Nilas
- Grey ice
- Grey-white ice
- Thin first-year ice
- Medium-year ice
- Thick first-year ice
- Old ice

Fast ice



Example sea ice chart with egg codes



SSII

Semantic Sea Ice Interoperability Initiative



Ontologies:

- *sea ice*
- *concentration*
- *development*
- *form*
- *ice of land origin*
- *Sigrid-3*
- *Egg Code*

[Home](#)

Ontology Browser

Load an Ontology: [Sea Ice](#) | [Seaice Concentration](#) | [Seaice Development](#) | [Seaice Form](#) | [Ice of Land Origin](#) | [Sigrid-3](#) | [Egg Code](#)

Ontology Browser V1.4.2 Help

All ontologies

Ontologies | Classes | Object Properties | Data Properties | Annotation Properties | Individuals | Datatypes | DL Query Options | Render labels ☒

Classes

+ Thing



+ Forms of floating ice

- + Ice fragment
- IceOfLandOrigin

+ Ice with Development Stage

+ SpatialObject

Forms of floating ice permalink

http://purl.org/wmo/seaice/form#IceWithForm  

Annotations (3)

- source "http://www.aari.nw.ru/gdsidb/docs/wmo/nomenclature/WMO_Nomenclature_draft_version1-0.pdf#Section1.1"
- comment "Any form of ice floating in water. The principal kinds of floating ice at the sea surface are sea ice which is formed by the freezing of sea water at the surface, lake ice and river ice formed on rivers or lakes and glacier ice (ice of land origin). The concept also includes ice that is grounded."
- label "Forms of floating ice"

Superclasses (1)

- Thing

“Modeling the Model”

- Semantically representing Sea Ice Characteristics and the disposition of shortwave radiation in the community sea ice model (CICE) to depict:
 - Modeled processes (ice thickness change, melt pond formation, disposition of SW radiation)
 - The observations upon which model parameters are based
 - The observations that could be used to validate the model
- The goal is for the ontology to serve as a bridge between the operational, research and modeling communities looking at sea ice characteristics and polar climate interactions



Thank You
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